

1. Question part 1/2 | 0478 Feb-March 2023 P1 V2 Q1

1 Computers can be infected with malware. Spyware is one example of malware.

(a) Tick (✓) **one** box to show a correct definition of spyware.

- A Software that activates a webcam and transmits the video to a third party that outputs it live on a website.

☐
- B Software that detects when a password is being entered and then emails the password to a third party.

☐
- C Software that records all data entered into a computer, analyses this data to find email addresses and passwords, then posts these to a website.

☐
- D Software that records all key presses and transmits these to a third party.

☐

[1]

(b) Complete the table by identifying and describing **two** other examples of malware.

	Malware	Description
1		
2		

[6]

(c) Proxy-servers and firewalls have some similar functions.

Identify **two** similarities and **one** difference between proxy-servers and firewalls.

Similarity 1
.....
.....

Similarity 2
.....
.....

Difference
.....
.....

2. Question | 0478 Feb-March 2023 P1 V2 Q2

2 A programmer has designed a three-dimensional (3D) interactive computer game. They are going to develop a program for the game. The program needs to run efficiently, but it must also be developed as soon as possible.

(a) Tick (✓) **one** box to identify whether the programmer should use a high-level language or a low-level language to develop the program.

Explain the reasons for your choice.

High-level language ☐

Low-level language ☐

Reasons for your choice
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.....
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.....
.....
..... [4]

(b) If the programmer chooses a high-level language, they can use a compiler or an interpreter to translate the high-level language into a low-level language.

Describe the operation of a compiler and of an interpreter.

Compiler
.....
.....
.....
Interpreter
.....
.....
.....

3. Question | 0478 May-June 2023 P1 V1 Q4

4 Complete the statements about different types of software.

Use the terms from the list.

Some of the terms in the list will **not** be used. You should only use a term once.

- application
- assembly language
- bootloader
- central processing unit (CPU)
- firmware
- hardware
- operating
- output
- system
- user

..... software provides the services that the computer requires; an example is utility software.

..... software is run on the operating system.

The system is run on the firmware, which is run on the

[4]

4. Question | 0478 May-June 2023 P1 V1 Q7

7 A programmer uses a low-level language to write a computer program for a vending machine.

(a) Describe what is meant by a low-level language.

.....

.....

.....

..... [2]

(b) Give **two** reasons why the programmer would choose to write the computer program in a low-level language instead of a high-level language.

1

.....

2

.....

[2]

5 A programmer writes a computer program using a high-level language.

(a) Tick (✓) **one** box to show which statement is correct about writing computer programs in a high-level language.

- A Mnemonics are used to create instructions.

☐
- B The computer program is harder to debug than a low-level language program.

☐
- C The computer program is machine independent.

☐
- D The hardware of the computer can be directly manipulated.

☐

[1]

(b) The programmer uses a compiler to translate the computer program.

(i) Describe how the compiler translates the computer program.

.....

.....

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..... [3]

(ii) Describe how the compiler reports errors.

.....

.....

.....

..... [2]

(c) The programmer uses an integrated development environment (IDE) to create the computer program.

One function of the IDE is that it has the built-in compiler.

Give **three** other common functions of an IDE.

1

2

3

[3]

10 A user has both system software and application software installed on their computer.

(a) Describe the difference between system software and application software.

Give an example of each software in your answer.

.....

.....

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..... [4]

(b) State which component in the computer would store both types of software when the power is turned off.

..... [1]

4 A programmer writes a computer program in a high-level language.

(a) Tick (✓) **one** box to show which statement is a benefit of writing a program in a high-level language, instead of a low-level language.

A The program can directly manipulate the hardware.

☐

B The program is machine independent.

☐

C The program is more memory efficient.

☐

D The program is quicker to execute.

☐

[1]

(b) Translators are used to translate the high-level language so that it can be processed by the computer.

(i) State what the high-level language is translated into.

..... [1]

(ii) One translator converts and executes the code line by line.

Identify which type of translator would do this.

..... [1]

(iii) One translator creates an error report displaying all the errors in the code before it can be executed.

Identify which type of translator would do this.

..... [1]

(iv) One translator creates an executable file.

Identify which type of translator would do this.

..... [1]

10 A computer has pages A, B and C that are stored in RAM. Page D needs to be sent to the RAM but the RAM is full.

Page B is **not** needed immediately.

Explain how virtual memory can be used in this scenario.

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..... [4]

11 Software is installed on a computer to manage files, memory and multitasking.

(a) State the name of the software that can do these tasks.

..... [1]

(b) Give **one** task that the software allows the user to do to manage files.

..... [1]

(c) Describe what is meant by managing memory.

.....
.....
.....
..... [2]

(d) A signal is sent within the computer to allow multitasking to occur.

State the name of this type of signal.

..... [1]

3 The table contains **four** descriptions about a computer system.

Complete the table by writing the correct term for each description.

Term	Description
.....	A collective term for the physical components of the computer system.
.....	A type of software that provides services that the user requires and allows the user to perform tasks on the computer.
.....	A type of software that manages the main functions of the computer, including managing files and managing memory.
.....	A type of software that is stored in the read only memory (ROM). It includes the basic input output system (BIOS) and the bootloader.

9 An interrupt is a type of signal that is used in a computer.

(a) State the name of the type of software that manages interrupts.

..... [1]

(b) Describe how interrupts are used when a key is pressed on a keyboard.

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.....
.....
.....
.....
.....
.....
.....
.....
..... [5]

(c) Interrupts can be hardware based or software based.

A key press is one example of a hardware interrupt.

(i) Give **two** other examples of a hardware interrupt.

- 1
-
- 2
-

[2]

11. Question part 2/2 | 0478 Oct-Nov 2023 P1 V1 Q9

(ii) Give **two** examples of a software interrupt.

1

.....

2

.....

[2]

1 A mobile telephone has built-in input and output devices.

(a) Give **two** examples of an input device that would be built into a mobile telephone.

- 1
- 2 [2]

(b) Give **one** example of an output device that would be built into a mobile telephone.

..... [1]

(c) The data storage in the mobile telephone can be measured using different units of measurement.

(i) State how many bits are equal to a byte.

..... [1]

(ii) State how many kibibytes (KiB) equal a mebibyte (MiB).

..... [1]

(d) The mobile telephone has an operating system.

Describe the purpose of the operating system.

.....

.....

.....

.....

.....

..... [3]

4 An employee uses a web browser on their computer.

(a) Describe the main purpose of a web browser.

.....

.....

.....

..... [2]

(b) The employee wants his payment details to be automatically filled in when he buys products using the internet.

Identify the function of a web browser that could be used for this purpose.

..... [1]

(c) The employee wants to be able to quickly access websites that he regularly uses.

Identify the function of a web browser that could be used for this purpose.

..... [1]

(d) The web browser uses the secure socket layer (SSL) protocol to transmit personal data securely over the internet.

State how the SSL protocol secures the data for transmission.

.....

..... [1]

5 A programmer uses a high-level language to create a computer program.

(a) (i) Identify **two** advantages to the programmer of using a high-level language instead of a low-level language.

1

2 [2]

(ii) Suggest **one** disadvantage to the programmer of using a high-level language instead of a low-level language.

..... [1]

(b) The programmer uses an integrated development environment (IDE) when creating the computer program.

State what is meant by an IDE.

.....

..... [1]

8 (a) Draw a diagram to represent how virtual memory is created and used.

[4]

(b) A student is using software to create 3D models. This process often requires the use of virtual memory.

Explain why virtual memory is needed for this process.

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.....

.....

.....

.....

..... [3]

16. Question part 1/2 | 0478 Feb-March 2024 P1 V2 Q3

3 A computer has an operating system (OS).

(a) Complete the table by writing each missing OS function name and description.

Function name	Description
managing memory	
	allows application software to run on the computer
managing peripherals	

[3]

(b) The OS handles interrupts.

(i) State the purpose of an interrupt.

[1]

(ii) Identify **one** input device and **one** example of an interrupt that it can generate.

Input device

Interrupt

[1]

Explain how the processor manages the current program and the interrupt.

..... [5]

6 A computer needs firmware and system software to operate.

(a) State the purpose of firmware.

.....
..... [1]

(b) Give **one** example of firmware.

..... [1]

(c) Give **two** examples of system software.

1
2
[2]

4 A student uses both system software and application software on their computer.

(a) Give **one** example of system software.

..... [1]

(b) Give **two** examples of application software.

1

2

[2]

(c) Describe the difference between system software and application software.

.....

.....

.....

.....

..... [2]

9 A printer runs out of ink and needs a new ink cartridge. An interrupt is sent and a message is generated to notify the user that the ink cartridge is empty.

(a) Complete the paragraph about the use of an interrupt in this process.

Use the terms from the list.

Some of the terms in the list will **not** be used. You should only use a term once.

- binary
- clock
- computer
- data
- error
- fetch–decode–execute cycle
- hexadecimal
- higher
- interrupt queue
- interrupt service routine (ISR)
- lower
- printer
- priority level
- secondary storage
- sorting
- transmission

The sends an interrupt to the
..... . The interrupt is given a
..... . The processor completes its current
..... and checks the
..... to see if there is an interrupt with
..... priority than the current task. If there is, it stores
the current task and fetches the interrupt. It then calls the
..... , which is a sequence of instructions that
handles the interrupt. The interrupt is handled, which generates a message to the user to
notify them that the ink cartridge is empty.

[7]

(b) Handling interrupts is one function of an operating system.

Give **two** functions of an operating system that relate to memory.

- 1
- 2

[2]

6 A computer programmer uses assembly language to create a computer program for an embedded system in a washing machine.

(a) State what is meant by an embedded system.

.....
..... [1]

(b) Give the name of the translator that will be used for the program.

..... [1]

(c) The washing machine needs to display error codes on a small screen if there is a problem with the washing machine.

The error codes are stored as binary. The binary numbers are too long to be displayed on the washing machine.

State how the error codes could be reduced in length to be displayed on the screen.

..... [1]

(d) Give **one** benefit to the programmer of using assembly language to write the program.

.....
..... [1]



- A built-in translator to convert the program into machine code is one way that the IDE helps the computer programmer.

Describe **three** other ways the IDE can help the programmer.

..... [6

21. Question part 1/2 | 0478 Oct-Nov 2024 P1 V1 Q7

7 A computer has an operating system.

(a) The operating system provides several functions.

(i) Tick (✓) **one** box to show which of these is **not** a function of the operating system.

- A

managing files

☐
- B

providing an interface

☐
- C

handling interrupts

☐
- D

loading the bootstrap

☐

[1]

21. Question part 2/2 | 0478 Oct-Nov 2024 P1 V1 Q7



(ii) Identify **one** other function of an operating system.

Describe the purpose of this function.

.....

.....

.....

..... [2]

(b) Give the name of the set of instructions that are provided to the operating system to allow it to run.

..... [1]

1 Different types of software can be run on a computer.

(a) State what is meant by software.

.....
..... [1]

(b) Utility software is one type of software that can be run on a computer.

Tick (✓) **one** box to show which software is an example of utility software.

- A spreadsheet ☐
- B anti-virus ☐
- C web browser ☐
- D database ☐

[1]

(c) Identify the type of software that manages inputs and outputs for the computer.

..... [1]

23. Question | 0478 Oct-Nov 2024 P1 V3 Q7

7 A computer programmer uses an integrated development environment (IDE) when creating a computer program.

Explain the purpose of the IDE.

.....

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.....

.....

.....

.....

..... [4]

7 Programs can be written in a high-level language or a low-level language.

(a) Machine code is one type of low-level language.

Identify **one** other type of low-level language.

Identify the translator that is needed for the type of low-level language you have identified.

Type of low-level language

Translator

[2]

24. Question part 2/2 | 0478 Feb-March 2025 P1 V2 Q7



(b) A high-level language can be translated into a low-level language, using a compiler or an interpreter.

Describe the advantages of using an interpreter instead of a compiler during software development.

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..... [4]

(c) Integrated development environments (IDEs) provide translators.

Identify **three** other common functions of an IDE.

1

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2

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3

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[3]

25. Question | 0478 May-June 2025 P1 V1 Q9

9 Each employee in a finance company has a computer and an electronic account.

(a) Each computer has an operating system. One function of the operating system is to manage memory.

Describe the role of the operating system in managing memory.

.....

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.....

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..... [3]

(b) The finance company is concerned that a hacker may perform a brute-force attack to gain access to an employee’s account.

(i) Describe how the hacker would perform the brute-force attack.

.....

.....

.....

..... [2]

(ii) Give **three** cyber security solutions that could be used to help prevent a brute-force attack from being successful.

1

2

3 [3]

(c) The company uses a digital currency to purchase a new car.

(i) State what is meant by a digital currency.

.....

..... [1]

(ii) The digital currency uses a process that involves a digital ledger. The ledger has time stamped transactions that cannot be altered.

Give the name of this process.

..... [1]

26. Question part 1/3 | 0478 May-June 2025 P1 V2 Q3

3 A programmer writes a program to store and sort all the data for the books in her home library.

(a) The programmer uses a high-level language to write the program.

One reason for writing the program using a high-level language is that it is easier to read and write.

Give **two** other reasons why the programmer chose to use a high-level language.

1

.....

2

.....

[2]

(b) The programmer uses an integrated development environment (IDE) to write the program.

One function of the IDE is to provide a translator.

(i) Complete the statements about translators.

Use the terms from the list. Some of the terms will **not** be used. You should only use a term once.

- | | | | | |
|-----------------|-----------|-------------|--------------|-------|
| all together | all | assembler | binary | error |
| executable file | executing | interrupt | line by line | |
| partial code | some | translating | whole code | |

A compiler translates the at once before
..... it. A compiler produces an error report that displays
..... errors.

An interpreter translates and executes the code

An interpreter stops execution when an is found
and continues once it is corrected.

[5]

26. Question part 2/3 | 0478 May-June 2025 P1 V2 Q3



(ii) Give **two** other functions commonly found in an IDE.

State the role of each function.

Function 1

Role

.....

Function 2

Role

.....

[4]

(c) The programmer wants to print a list of all her books on paper.

(i) Identify a suitable type of printer that she could use to print this list.

..... [1]

(ii) The programmer needs to connect the printer to her computer. The printer is on the same desk as her computer.

Give a suitable method of data transmission that could be used to connect the computer to the printer.

Explain your choice.

Data transmission method

Explanation

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.....

.....

[6]

- Describe how an even parity check detects an error.

[4]

[4]

4 A computer has an operating system.

One function of the operating system is handling interrupts.

(a) Describe the role of the operating system in handling interrupts.

.....

.....

.....

..... [2]

(b) Give **two** other functions of an operating system.

1

2 [2]

(c) Hardware and software interrupts are two types of interrupt.

(i) Give **one** example of a hardware interrupt.

..... [1]

(ii) Give **one** example of a software interrupt.

..... [1]

4 A computer game development company are reviewing their current security solutions.

The company wants employees to be aware of how they can identify phishing.

(a) Describe the process of phishing.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(b) Give **two** ways an employee could identify phishing.

1

.....

2

.....

[2]

(c) The company has installed anti-malware software on all employees' computers.

Give **three** examples of malware that anti-malware software can detect.

1

2

3

[3]

28. Question part 2/2 | 0478 Oct-Nov 2025 P1 V1 Q4



(d) The computer game developers use a high-level language to create a computer game.

(i) State what is meant by a high-level language.

.....
..... [1]

(ii) One benefit of using a high-level language is that the code is easy to debug.

Give **two** other benefits of using a high-level language.

1
.....
2
..... [2]

(iii) One drawback of using a high-level language is that it must be converted to a low-level language before it can be run.

Give **one** other drawback of using a high-level language.

.....
..... [1]

(iv) The computer game developers use an interpreter instead of a compiler when developing the computer game.

Explain why an interpreter would be more appropriate for developing the computer game.

.....
.....
.....
.....
.....
..... [3]

3 A programmer uses assembly language to create a program for a coffee machine.

(a) Describe what is meant by assembly language.

.....

.....

.....

..... [2]

(b) Identify the translator needed for assembly language.

..... [1]

(c) Tick (✓) **one** box to show which statement is an advantage of using assembly language.

A	It is close to human language.	☐
B	It is memory efficient.	☐
C	It is easy to debug.	☐
D	It is machine independent.	☐

[1]